4. GENERAL PROTECTION/COLLECTION STRATEGIES

4.1. Chapter Overview

This chapter details the specific response strategies and resources to protect as outlined by the participants of the GRP workshop for the Willapa Bay area. It describes the strategies determined for each area and the prioritization of those strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Maps & Matrices

The maps in this chapter provide information on the specific location of booming strategies. They are designed to help the responder visualize response strategies. Details of each booming strategy are listed in corresponding matrix tables. Each matrix indicates the exact location, intent and implementation of the strategy indicated on the map. The "Status" column describes whether the strategy has been visited or tested in the field, and the date of the visit/test. Most strategies include a number for the corresponding shoreline photo, which is available on the Washington Department of Ecology's internet site at http://www.ecy.wa.gov/apps/shorephotos/.

Major Protection Techniques

All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in Section 4.2 are based on the following techniques, and are explained in detail in Section 4.3:

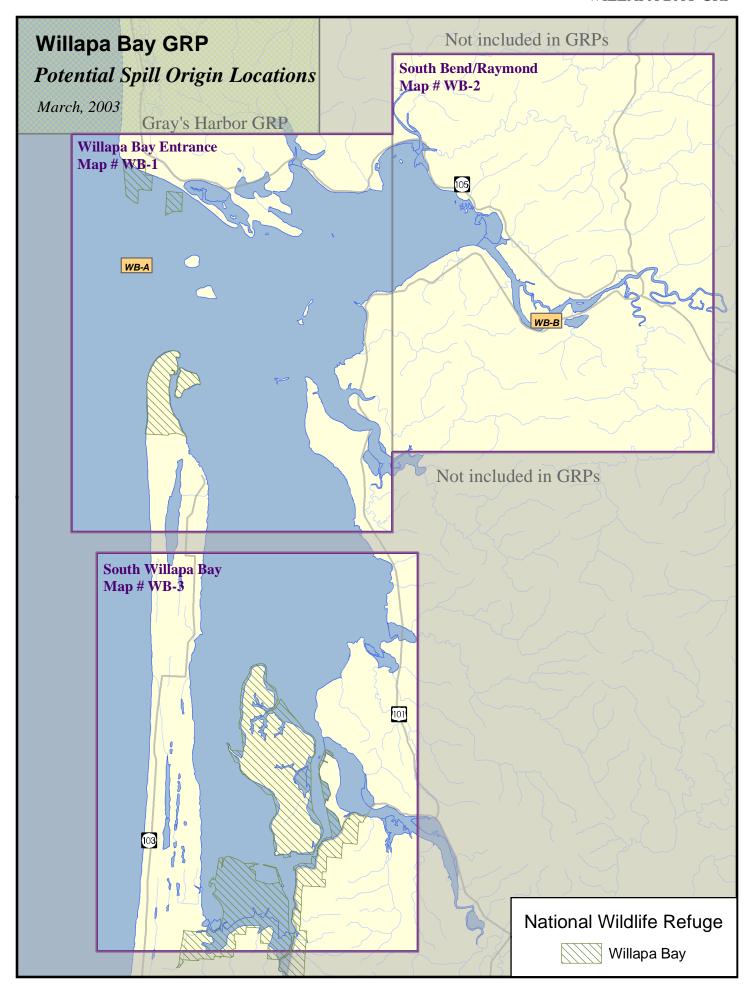
Dispersants: Washington State Policy currently does not allow use of dispersants in this area. Certain chemicals break up slicks on the water. Dispersants can decrease the severity of a spill by speeding the dissipation of certain oil types. Their use will require approval of the Unified Command. Dispersants will only be used in offshore situations under certain conditions, until further determinations are made by the Area Committee and published in the Area Contingency Plan.

In Situ Burning: Approval to burn in this area is unlikely due to the proximity of population to a potential burn site. Burning requires the authorization of the Unified Command, who determine conformance of a request to burn with the guidelines set forth in the Area Plan. This option is preferable to allowing a slick to reach the shore provided that population areas are not exposed to excessive smoke. Under the right atmospheric conditions, a burn can be safely conducted in relative close proximity to human population. This method works on many types of oil, and requires special equipment including a fire boom and igniters.

Mechanical Recovery and Protection Strategies: If a spill is too close to shore to use In Situ burning or dispersants, the key strategies are skimming and use of collection, diversion, or exclusion booming to contain and recover the oil, and prevent it from entering areas with sensitive wildlife and fisheries resources. These options are described in detail in Appendix A. Specific skimming strategies are not listed in the maps and matrices, but skimming should be used whenever possible and is often the primary means of recovering oil and protecting resources, especially when booming is not possible or feasible.

Priorities: The strategy priority tables (Section 4.2.) were developed using specific locations where spills are likely to occur. Trajectory modeling was used for each of these "Potential Spill Origins" to identify sensitive resources that would likely be impacted within the initial hours of the spill. A booming strategy priority table was developed for each of the "Potential Spill Origins" based on the sensitivity of resources, feasibility, etc. **Booming strategies should be deployed following the priority table for the "Potential Spill Origin" closest to the actual spill origin.** The map on page 4-2 shows the locations of all Potential Spill Origins for the Willapa Bay GRP. The booming strategies indicated in the priority tables are explained in detail in the Maps & Matrices section (Section 4.3.). It is implied that control and containment at the source is the number one priority of any response. If in the responder's best judgment this is not feasible, then the priorities laid out in the priority tables take precedence over containment and control.

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WILLAPA BAY GRP

4.2.2 Booming Strategy Priority Tables

Table 4-1

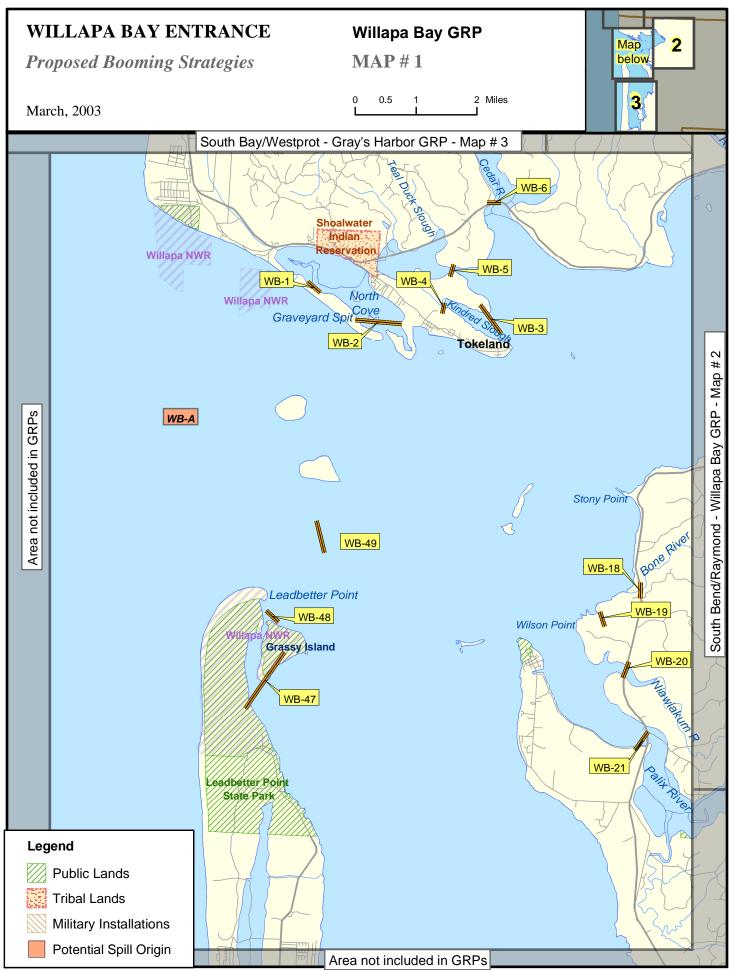
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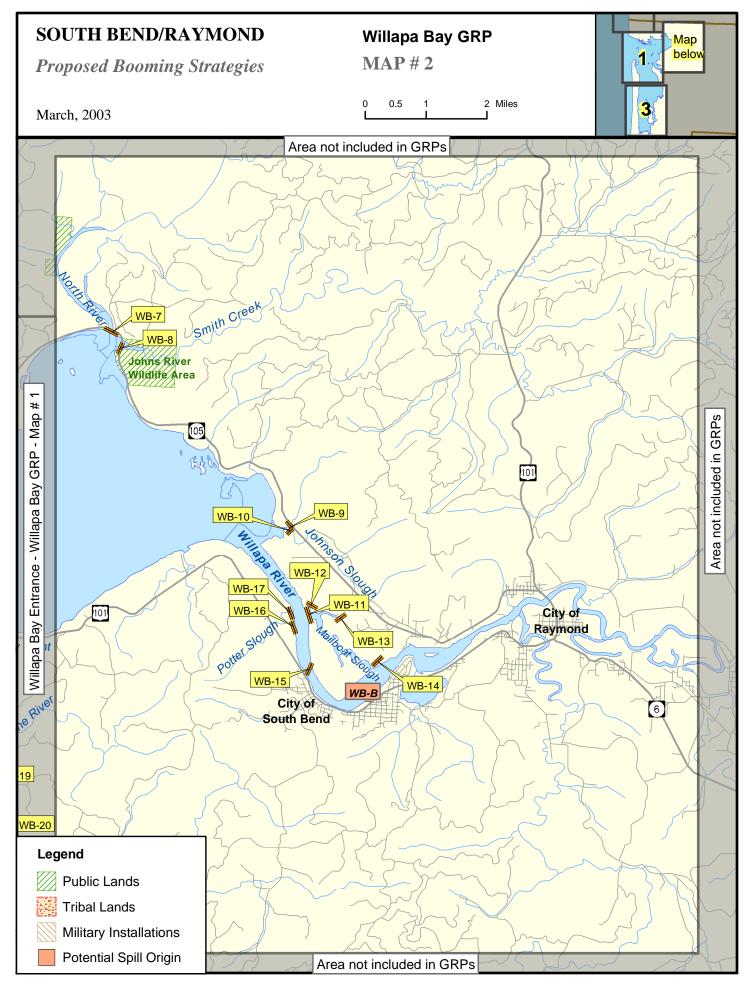
otential Spill Origin: WB-A - Oil entering Willapa Bay on a flood tide from a source outside of			
7			
BOOMING	STRATEGY	MAP PAGE	COMMENTS
PRIORITY	NUMBER	NUMBER	COMMENTS
1	WB-1	4-5	
2	WB-2	4-5	
3	WB-47	4-5	
4	WB-48	4-5	
5	WB-3	4-5	
6	WB-4	4-5	Tide Gate
7	WB-5	4-5	Tide Gate
8	WB-6	4-5	
9	WB-7	4-6	
10	WB-8	4-6	
11	WB-18	4-5	
12	WB-19	4-5	
13	WB-20	4-5	
14	WB-21	4-5	
15	WB-12	4-6	
16	WB-15	4-6	
17	WB-9	4-6	
18	WB-10	4-6	Tide Gate
19	WB-16	4-6	
20	WB-17	4-6	

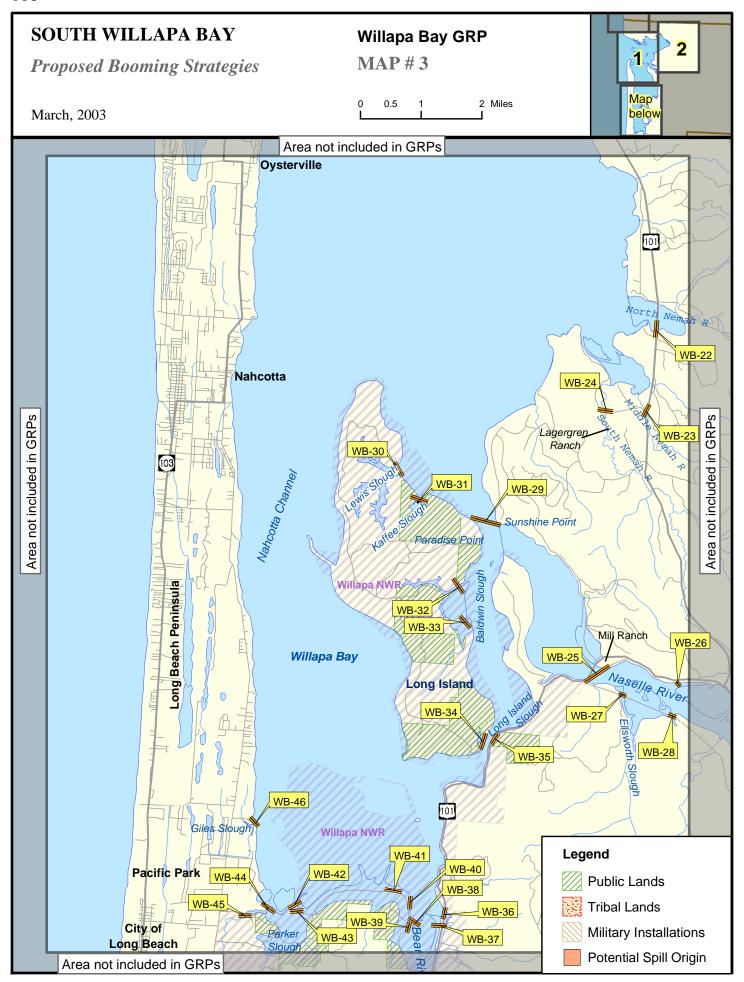
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Table 4-4

Potential Spill Origin: WB-B - Oil entering Willapa Bay on an ebb tide from a source in the Willapa River BOOMING STRATEGY COMMENTS MAP PAGE PRIORITY NUMBER NUMBER 4-6 WB-15 2 WB-14 4-6 WB-12 3 4-6 WB-16 4 4-6 5 WB-17 4-6 WB-3 4-5 6 7 WB-5 4-5 WB-2 4-5 8 WB-1 9 4-5 WB-48 10 4-5







Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** North Cove Shorebird and PAC0023 Exclusion -Deploy boom across the west Tokeland waterfowl opening to marsh. Area nearly dry at Marina 46°-43.153'N Prevent oil from By boat only from concentrations, slough moving into marsh. 900' 124°-02.392'W Tokeland Marina. WB-1 low tide. (PAC0042). and marsh habitat. Deploy boom at angle to close off east entrance to marsh. Place boom Shorebird and North Cove Exclusion during flood tide or will need ATV's Tokeland waterfowl 46°-42.456'N Prevent oil from or helicopter. Area nearly dry at low Marina By boat only from concentrations, slough 124°-00.738'W moving into marsh. 1500' tide. (PAC0042). Tokeland Marina. and marsh habitat. WB-2 Kindred Slough Exclusion -Shorebird and PAC0048 Prevent oil from Install boom at an angle across Tokeland waterfowl 46°-42.562'N moving into slough entrance. Site can only be Marina By boat only from concentrations, slough 123°-58.268'W 2400' boomed at high tide. (PAC0042). Tokeland Marina. and marsh habitat. WB-3 slough. Must cross private farm land to get to Kindred Slough tide gate, access from Tide Gate Highway 105 at north Shorebird and PAC0047 Close tide gate. Deploy boom in Tokeland end of levee road. waterfowl 46°-42.917'N front of tide gate if gate cannot be Marina Permission is required concentrations, slough Exclusion - Keep 123°-59.482'W oil out of slough. closed or if it leaks. (PAC0042). and marsh habitat. WB-4 100' or use helicopter. Must cross private farm land to get to tide gate, access from Teal Duck Slough Tide Highway 105 at north Shorebird and Close tide gate. Deploy boom in Gate PAC0053 Tokeland end of levee road. waterfowl 46°-42.398'N Exclusion - Keep front of tide gate if gate cannot be Marina Permission is required concentrations, slough 123°-59.326'W oil out of slough. 100' closed or if it leaks. (PAC0042). or use helicopter. and marsh habitat. WB-5 Cedar River Install boom at an angle across river PAC0060 Exclusion mouth downstream of bridge at Take Hwy 105 from 46°-44.398'N Prevent oil from Highway 105. River may have tide Stage on Hwy Raymond toward Salmon, waterfowl 300' 105 at site. Tokeland. WB-6 123°-58.570'W moving up river. gate (need to verify). concentrations.

4-8 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy **Strategy Implementation** Status Location Boom **Staging Area** Site Access **Resources Protected** North River North River Resort or Smith Take Hwy 105 west Creek. Both PAC0083 Exclusion from Raymond to 46°-45.040'N Prevent oil from Install boom at an angle across river sites have launch North River Bridge, Salmon, waterfowl at bridge on Highway 105. 600' 10.5 miles. 123°-53.187'W moving up river. concentrations. **WB-7** ramps. Smith Creek Take Hwy 105 west PAC0083 Exclusion from Raymond to Install boom at an angle across creek | Smith Creek 46°-44.815'N Smith Creek Bridge, Prevent oil from Salmon, waterfowl 400' at bridge on Highway 105. **WB-8** 123°-53.085'W moving up creek. boat launch. 10 miles. concentrations. Take Hwy 105 from Exclusion -Raymond toward Prevent oil from Tokeland, Go 5.4 Fleiss Creek Salmon, shorebird and PAC0098 miles from turnoff of waterfowl moving into Install boom at an angle across slough/ creek at bridge on Highway 46°-42.387'N slough/ creek Stage along Hw Hwy 101 onto Hwy concentrations, slough WB-9 123°-49.389'W mouth. 200' 105. 105. 105. and marsh habitat. Johnson Slough Take road from Tide Gate Highway 105 to Shorebird and Willapa Bay Airport, PAC0098 Close tide gate. Deploy boom in waterfowl 46°-42.337'N front of tide gate if gate cannot be Stage along Hwy dike access road is off concentrations, slough Exclusion - Keep 123°-49.345'W oil out of slough. 100' closed or if it leaks. 105 airport road. and marsh habitat. WB-10 Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (west entrance) South Bend. west on Hwy 101 to Shorebird and PAC0103 Park has boat South Bend. Boat waterfowl 46°-41.150'N concentrations, slough Exclusion - Keep Deploy boom across slough entrance. launch. ramp is at west end of 123°-48.935'W oil out of slough. Must install during high tide. (PAC0145). 1300' and marsh habitat. WB-11 town.

4-9 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy Status Location Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (middle channel) South Bend. west on Hwy 101 to Shorebird and South Bend. Boat PAC0103 Close tide gate. Deploy boom in Park has boat waterfowl front of tide gate if gate cannot be 46°-41.115'N Exclusion - Keep launch. ramp is at west end of concentrations, slough 123°-48.250'W 100' oil out of slough. closed or if it leaks. (PAC0145). and marsh habitat. WB-12 town. Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (north channel) South Bend. west on Hwy 101 to Shorebird and Close tide gate. Deploy boom in PAC0103 Park has boat South Bend. Boat waterfowl front of tide gate if gate cannot be ramp is at west end of concentrations, slough 46°-41.285'N launch. Exclusion - Keep oil out of slough. (PAC0145). 123°-48.885'W 100' closed or if it leaks. and marsh habitat. **WB-13** town Helen Davis Memorial Park at west end of Mailboat Slough From Raymond, go (east entrance) Exclusion -South Bend. west on Hwv 101 to Shorebird and PAC0112 Prevent oil from Park has boat South Bend. Boat waterfowl Deploy boom at an angle across 46°-40.422'N moving into launch. ramp is at west end of concentrations, slough and marsh habitat. **WB-14** 123°-47.589'W slough. 200' slough entrance. (PAC0145). town. Helen Davis Memorial Park Exclusion/ Deploy boom at an 45-60 deg. angle at west end of From Raymond, go Willapa River Collection across river. Use boat launch for South Bend. west on Hwv 101 to Salmon, shorebird and PAC0144 Prevent oil from collection. This strategy can also be Park has boat South Bend. Boat waterfowl used for spills upstream to keep oil 46°-40.283'N moving up or down launch. concentrations, slough ramp is at west end of 123°-48.908'W river. 1000' out of the bay. (PAC0145). and marsh habitat. **WB-15** town.

4-10 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location **Strategy** Boom **Staging Area** Site Access **Resources Protected** Helen Davis Memorial Park Potter Slough at west end of From Raymond, go (south entrance) Exclusion -South Bend. west on Hwy 101 to Shorebird and PAC0147 Park has boat South Bend. Boat Prevent oil from waterfowl Deploy boom across slough entrance. launch. 46°-40.955'N moving into ramp is at west end of concentrations, slough 123°-49.269'W slough. 250' Must install at high tide. (PAC0145). and marsh habitat. WB-16 town. Helen Davis Memorial Park Potter Slough at west end of From Raymond, go (north entrance) Exclusion west on Hwy 101 to Shorebird and South Bend. PAC0148 Prevent oil from Park has boat South Bend. Boat waterfowl 46°-41.138'N launch. ramp is at west end of concentrations, slough moving into Deploy boom across slough entrance. 123°-49.269'W Must install at high tide. (PAC0145). and marsh habitat. WB-17 slough. 250' town Stage at north end of Bone Bone River Salmon, shorebird and Exclusion -River Bridge PAC0174 waterfowl Deploy boom at an angle across river Take Hwy 101 south on west side of bridge on Highway 46°-38.936'N Prevent oil from just off Hwy from Raymond to concentrations, slough 300' 101. 123°-55.169'W 101. Bone River. and marsh habitat. WB-18 moving up river. Take Hwy 101 13.5 miles south from Raymond. Turn west Wilson Point Stage near site Shorebird and Marsh PAC0177 Exclusion where BLM onto BLM logging waterfowl 46°-38.536'N Prevent oil from Deploy boom at an angle across logging road road and follow to concentrations, slough moving into marsh. 100' 123°-55.892'W marsh. and marsh habitat. WB-19 marsh entrance near old BLM road. crosses marsh Stage just off Hwy 101 at small oyster Niawiakum Take Hwv 101 14.5 Salmon, shorebird and company on River PAC0185 Exclusion west side of miles south from waterfowl 46°-37.821'N Prevent oil from Deploy boom at an angle across river Hwy, north side Raymond to concentrations, slough 123°-55.475'W moving up river. 800' west of bridge on Highway 101. of river. Niawiakum River. and marsh habitat. WB-20

4-11 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location Strategy Boom **Staging Area** Site Access **Resources Protected** Take Hwy 101 15.8 miles south from Palix River Stage at boat Salmon, shorebird and PAC0191 Exclusion launch just soutl Raymond to Palix waterfowl Prevent oil from of Palix River 46°-36.752'N Deploy boom at an angle across river River. Site is on north concentrations, slough moving up river. WB-21 123°-55.059'W 1200' west of bridge on Highway 101. bridge. side of river. and marsh habitat. North Nemah Salmon, shorebird and River PAC0239 Exclusion -Deploy boom at an angle across river Stage near Hwy Take Hwy 101 south waterfowl 46°-30.753'N Prevent oil from mouth west of bridge on Highway 101 at N. Nemah from Raymond to N. concentrations, slough 123°-53.581'W 750' 101. Difficult to boom at low water. River Nemah River bridge. and marsh habitat. moving up river. **WB-22** Middle Nemah Stage off Hwy Salmon, shorebird and River PAC0242 Exclusion -101 on dirt road Take Hwy 101 south waterfowl 46°-29.628'N Deploy boom at an angle across river from Raymond to Prevent oil from (Lagergren concentrations, slough west of bridge on Highway 101. 123°-54.096'W and marsh habitat. **WB-23** moving up river. 200' Ranch). Nemah River area. South Nemah Stage off Hwy Salmon, shorebird and River PAC0242 Exclusion -101 on dirt road Take Hwy 101 south waterfowl Deploy boom at an angle across river (Lagergren from Raymond to 46°-29.627'N Prevent oil from concentrations, slough at bridge for Lagergren Ranch. 123°-54.106'W moving up river. 200' Ranch). Nemah River area. and marsh habitat. **WB-24** Naselle River Exclusion/ Deploy boom at an angle across river Stage at old Mill By boat only from the Salmon, shorebird and on east side of bridge at Highway PAC0272 Collection -Ranch site (north Willapa NWR ramp waterfowl 46°-25.952'N concentrations, slough Prevent oil from 101 to collection site on north shore side of Naselle near the south end of **WB-25** 123°-53.945'W moving up river. 2000' at old Mill Ranch. Bridge). Long Island. and marsh habitat. Roaring Creek Exclusion -Stage at old Mill By boat only from the Shorebird and Ranch site (north Willapa NWR ramp Slough Prevent oil from waterfowl 46°-25.709'N moving into Deploy boom at an angle across side of Naselle near the south end of concentrations, slough WB-26 123°-52.457'W slough. 600' slough entrance. Bridge). Long Island. and marsh habitat.

4-12 March 2003

Proposed Booming and Collection Strategies: Matrices 4.3.2 Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond to Naselle River Bridge. Exclusion -Stage at Shorebird and Ellsworth Slough Prevent oil from Ellsworth Cross bridge and take waterfowl 46°-25.590'N moving into Deploy boom across slough entrance Slough just off first left (Parpala concentrations, slough 123°-53.599'W 600' north of bridge at Parpala Road. of Parpala Road and marsh habitat. slough. Road). **WB-27** Take Hwy 101 south from Raymond to Naselle River Bridge. Salmon, shorebird and Exclusion -Cross bridge and take waterfowl Smith Creek first left (Parpala 46°-25.310'N Prevent oil from Deploy boom across creek mouth Stage along concentrations, slough north of bridge at Parpala Road. Parpala Road. 123°-52.472'W moving up creek. 400' Road). and marsh habitat. **WB-28** Exclusion -National Wildlife Prevent oil from Stage at Willapa By boat only at high Refuge - shorebird Bay NWR Sunshine Point moving into tide from the Willapa and waterfowl Deploy boom at an angle across PAC0261 Naselle River or Headquarters NWR ramp near the concentrations, seal 46°-27.936'N Long Island channel from Sunshine Point to and boat launch south end of Long haulouts, slough and WB-29 123°-56.203'W Slough. 2400' Paradise Point. area (PAC0295) Island. marsh habitat. National Wildlife Stage at Willapa By boat only at high Refuge - shorebird Lewis Slough Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl PAC0318 Prevent oil from slough entrance. Need high tide to Headquarters NWR ramp near the concentrations, seal 46°-28.535'N boom. Need Refuge permission to and boat launch south end of Long haulouts, slough and moving into 123°-58.328'W 1000' area (PAC0295) marsh habitat WB-30 slough. access site Island National Wildlife Stage at Willapa Refuge - shorebird By boat only at high Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl Kaffee Slough PAC0315 Prevent oil from slough entrance. Need high tide to Headquarters NWR ramp near the concentrations, seal 46°-28.185'N boom. Need Refuge permission to and boat launch haulouts, slough and moving into south end of Long 123°-57.896'W 450' area (PAC0295) Island. marsh habitat. WB-31 slough. access site.

4-13 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area Site Access Resources Protected** National Wildlife Stage at Willapa By boat only at high Refuge - shorebird Baldwin Slough (north entrance) Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl PAC0311 Prevent oil from north slough entrance. Need high Headquarters NWR ramp near the concentrations, seal 46°-27.036'N moving into tide to boom. Need Refuge and boat launch south end of Long haulouts, slough and 123°-56.945'W 400' permission to access site. area (PAC0295) Island. marsh habitat. slough. **WB-32** National Wildlife Stage at Willapa By boat only at high Baldwin Slough Refuge - shorebird Deploy boom at an angle across Bay NWR (south entrance) Exclusion tide from the Willapa and waterfowl PAC0309 south slough entrance. Need high Prevent oil from Headquarters NWR ramp near the concentrations, seal tide to boom. Need Refuge and boat launch south end of Long haulouts, slough and 46°-26.513'N moving into 123°-56.878'W slough. 400' permission to access site. area (PAC0295) Island. marsh habitat. **WB-33** National Wildlife Long Island Stage at Willapa By boat only at high Refuge - shorebird Slough Exclusion -Bay NWR tide from the Willapa and waterfowl NWR ramp near the PAC0300 Prevent oil from Headquarters concentrations, seal moving into haulouts, slough and 46°-24.731'N Install boom across slough. Need and boat launch south end of Long 123°-56.249'W slough. 900' Refuge permission to access site. WB-34 area (PAC0295) Island. marsh habitat. Lake at Willapa National Take Hwy 101 south Stage at Willapa Wildlife Refuge from Raymond to Headquarters Willapa NWR Block culvert with boom or plywood Bay NWR PAC0295 Discharge from lake will normally Headquarters Headquarters near National Wildlife keep oil out. Could enter only at 46°-24.841'N Exclusion - Keep and boat launch south end of Long Refuge - waterfowl 123°-56.139'W oil out of lake. 100' WB-35 high tide. area (PAC0295) Island. concentrations.

4-14 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy **Strategy Implementation** Status Location Boom **Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond. Deploy boom at Tidal marsh at bridge at mouth of mouth of Bear Exclusion -Bear River. Boat Shorebird and River PAC0355 Prevent oil from access at high tide waterfowl Deploy boom across tidal marsh entrance west of bridge at Highway only from the refuge 46°-22.298'N moving into tidal Stage at concentrations, slough 123°-57.067'W 400' and marsh habitat. **WB-36** marsh. 101. Highway 101. ramp. Take Hwy 101 south from Raymond. Bear River Deploy boom near (main channel) bridge at mouth of National Wildlife Refuge - salmon, PAC0355 Exclusion -Bear River. Boat 46°-22.321'N Prevent oil from Deploy boom across river mouth near Stage at access only from the waterfowl bridge at WB-36. 123°-57.035'W moving up river. 350' Highway 101. refuge ramp. concentrations. **WB-37** Take Hwy 101 south from Raymond. After crossing bridge at National Wildlife Stage at Willapa Bear River (west mouth of Bear River. Refuge - salmon, Bay NWR channel) take Jeldness Road to shorebird and Install boom at an angle across river PAC0361 Exclusion -Headquarters dike access road. waterfowl Prevent oil from entrance. Refuge permission 46°-22.171'N and boat launch Boat access at high concentrations, slough 123°-57.654'W moving up river. 150' required. area (PAC0295) tide only. and marsh habitat. **WB-38** Take Hwy 101 south WBNWR Tide Stage at Willapa from Raymond. After National Wildlife Gate #1 Close tide gate. Deploy boom in front Bay NWR crossing bridge at Refuge - shorebird of tide gate if gate cannot be closed PAC0362 Headquarters mouth of Bear River, and waterfowl or if the gate leaks. Refuge concentrations, slough 46°-22.277'N Exclusion - Keep and boat launch take Jeldness Road to oil out of slough. permission required. dike access road. 123°-57.756'W 100' area (PAC0295) and marsh habitat. WB-39

4-15 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond. After **WBNWR** Tide Stage at Willapa National Wildlife Close tide gate. Deploy boom in front Bay NWR crossing bridge at Refuge - shorebird Gate #2 PAC0362 of tide gate if gate cannot be closed mouth of Bear River, Headquarters and waterfowl 46°-22.465'N or if the gate leaks. Refuge and boat launch Exclusion - Keep take Jeldness Road to concentrations, slough 123°-57.761'W permission required. and marsh habitat. oil out of slough. 100' area (PAC0295) dike access road. WB-40 Take Hwy 101 south WBNWR Tide Stage at Willapa from Raymond. After National Wildlife Close tide gate. Deploy boom infront Bay NWR crossing bridge at Gate #3 Refuge - shorebird of tide gate if gate cannot be closed Headquarters PAC0363 mouth of Bear River. and waterfowl or if the gate leaks. Refuge 46°-22.635'N Exclusion - Keep and boat launch take Jeldness Road to concentrations, slough 100' permission required. WB-41 123°-57.045'W oil out of slough. area (PAC0295) dike access road. and marsh habitat. Take Hwy 101 south Stage at Willapa from Raymond. After National Wildlife Bay NWR crossing bridge at Parker Slough Refuge - shorebird PAC0368 Deploy boom at an angle across Headquarters mouth of Bear River. and waterfowl slough entrance. Need Refuge 46°-22.378'N Exclusion - Keep and boat launch take Jeldness Road to concentrations, slough 900' **WB-42** 124°-00.188'W oil out of slough. permission to access site. area (PAC0295) Parker Slough. and marsh habitat. Parker Slough Stage at Willapa National Wildlife Tide Gate Close tide gate. Deploy boom in front Bay NWR Follow directions for Refuge - shorebird of tide gate if gate cannot be closed Headquarters PAC0368 WB-44, continue on and waterfowl or if the gate leaks. Refuge 46°-22.220'N Exclusion - Keep and boat launch dike access road to concentrations, slough oil out of slough. permission required. 124°-00.384'W 100' area (PAC0295) tide gate. and marsh habitat. **WB-43** Take Hwy 101 to Tarlatt Slough Stage at Willapa Peninsula Highway, Tide Gate Bay NWR go north to dirt road Shorebird and PAC0370 Close tide gate. Deploy boom in front Headquarters 1300' past Pioneer waterfowl 46°-22.202'N of tide gate if gate cannot be closed and boat launch Road, dirt road leads Exclusion - Keep concentrations, slough 124°-01.091'W oil out of slough. 100' or if the gate leaks. area (PAC0295) to tide gate. and marsh habitat. **WB-44**

4-16 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location Strategy Boom **Staging Area** Site Access **Resources Protected** Boat access only at high tide, use ramp at Willapa Bay NWR Stage at Willapa Headquarters or Exclusion -Bay NWR Nahcotta. Need Shorebird and Tarlatt Slough PAC0369 Prevent oil from Headquarters Willapa NWR waterfowl 46°-22.410'N and boat launch permission to access concentrations, slough moving into Deploy boom at an angle across 124°-00.532'W 480' area (PAC0295) site and marsh habitat. **WB-45** slough. slough entrance. Boat access only at high tide, use ramp at Willapa Bay NWR Stage at Willapa Headquarters or Exclusion -Bay NWR Nahcotta. Need Giles Slough Shorebird and PAC0375 Prevent oil from Headquarters Willapa NWR waterfowl 46°-23.505'N moving into Deploy boom at an angle across and boat launch permission to access concentrations, slough 124°-00.965'W and marsh habitat. 900' slough entrance. area (PAC0295) **WB-46** slough. site. Boat access only at Grassy Island Stage at high tide, use ramp at National Wildlife (south) Refuge - shorebird Nahcotta Marina Nahcotta or Tokeland PAC0438 (PAC0403). Need Willapa NWR Exclusion - Keep and waterfowl oil from moving 46°-37.556'N Deploy boom at south end of Grassy west of Ocean permission to access concentrations, marsh **WB-47** 124°-02.961'W into marsh area. 1700' Island, high tide only. Park. site. habitat. Boat access only at Stage at high tide, use ramp at National Wildlife Deploy boom at north end of Grassy Nahcotta Marina Refuge - shorebird Grassy Island Nahcotta or Tokeland Need Willapa NWR Island, high tide only. Entrance to (north) PAC0438 Exclusion - Keep (PAC0403), and waterfowl 46°-38.251'N oil from moving marsh is variable and may be blocked west of Ocean permission to access concentrations. **WB-48** 124°-02.765'W into marsh area. 1000' with sand. Park. site. marshes. Boat access only at high tide, use ramp at Stage at Nahcotta Marina Nahcotta or Tokeland Gunpowder Sands Deflection -Angle boom southeast from east side (PAC0403). Need Willapa NWR 46°-38.359'N Deflect oil into of Gunpowder Sands to deflect oil west of Ocean permission to access Shorebirds and 2000' WB-49 124°-0.996'W main channel. away. Park. site. waterfowl.

4-17 March 2003